

## PATENT ABSTRACTS OF JAPAN

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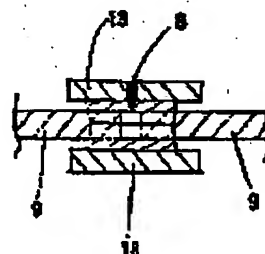
## (54) CONNECTION METHOD FOR WEATHER STRIP FOR AUTOMOBILE

## (57)Abstract:

**PURPOSE:** To provide excellent adhesion and prevent the generation of air bubbles by a method wherein the end of an extrusion molded hollow-form extrusion rubber is positioned facing a connection part formed at the end and with this state, the end part and the connection part are securely placed, and a thermoplastic resin is injected into the connection for joining.

**CONSTITUTION:** The end part of an extrusion molded hollow-form extrusion rubber 9 is positioned facing a connection part formed at the end part and the end part and the connection part are securely placed in an injection molding tool 13 in the same shape in cross section as that of the hollow-form extrusion rubber. A thermoplastic resin is injection-molded against the connection part through an injection nozzle 8 for joining. A hollow-form shape rubber component is EPDM-based and meanwhile, a non-vulcanization polyolefin thermoplastic elastomer is used for a plastic component.

The injection molding die 13 to mold the same shape as that of the extrusion hollow rubber 9 is used. After the extrusion hollow-form shape rubber is held through injection molding die in such a manner to prevent pull-off by an injection elastomer, molding is effected by a general purpose injection molder.



## LEGAL STATUS

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**CLAIMS**

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[Claim(s)]

[Claim 1] The connection method of the weather strip for automobiles which a connection is made to prepare and counter the edge and edge of this hollow-like extrusion rubber by which extrusion molding was carried out in the weather strip for automobiles which joins the edge by which extrusion molding was carried out to the shape of hollow, and an edge, and carries out installation immobilization at an injection-molding mold, and is characterized by carrying out injection molding of the thermoplastics at this connection, and joining.

[Claim 2] The connection method of the weather strip for automobiles according to claim 1 with which injection molding of the connection is carried out from the injection-molding mold of the same configuration as the cross section of hollow extrusion rubber.

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]****[0001]****[Industrial Application]** It is related with the weather strip for automobiles.**[0002]****[Description of the Prior Art]** it extrudes by vulcanizing EPDM system rubber equivalent to an extrusion rubber ingredient using the die which can be fabricated a knockout configuration and in the shape of isomorphism by the mold temperature of 150 degrees C - 200 degrees C, and the process condition for 4 minutes - vulcanizing time 6 minutes, and rubber is connected -- making -- the perimeter -- it connects in the shape of [ of the same cross-section configuration ] a loop formation, and a weather strip is manufactured.**[0003]****[Problem(s) to be Solved by the Invention]**

1) There is a limitation in cycle time compaction and the EPDM system rubber which is thermosetting resin needs 4 minutes or more in the present condition.

2) It is easy to generate appearance faults, such as air bubbles, in low compacting pressure.

**[0004]** By the EPDM system, after [ from which a plastics component does not escape by the elastomer by which the rubber component was injected using the thermoplastic elastomer of a polyolefine system as a result of inquiring wholeheartedly, in order to solve the above-mentioned technical problem ] holding with metal mold like, when extrusion rubber fabricated with a general-purpose injection molding machine, the connection which a good adhesive property is acquired and does not produce appearance faults, such as air bubbles, was obtained.**[0005]****[Means for Solving the Problem]** That is, in the weather strip for automobiles which joins the edge by which extrusion molding was carried out to the shape of hollow, and an edge, this invention makes a connection prepare and counter the edge and edge of this hollow-like extrusion rubber by which extrusion molding was carried out, and is the connection method of the weather strip for automobiles which hollow-like extrusion rubber and a cross section carry out installation immobilization at the injection-molding mold of the same configuration, and is characterized by carrying out injection molding of the thermoplastics at this connection, and joining.**[0006]** This invention is explained based on a drawing. Drawing 1 is the outline top view of the weather strip for automobiles, and drawing 2 is the A-A view sectional view of drawing 1.

Although the connection 7 of drawing 1 connects the knockout hollow-like mold goods of EPDM system rubber in the shape of a loop formation conventionally If it explains in full detail, will cut the unvulcanized rubber which extruded with EPDM system rubber equivalent to an extrusion rubber ingredient using the die which can be fabricated an extrusion hollow-like configuration and in the shape of isomorphism, and was extruded in the rubber hollow-like configuration in a fixed configuration, and it will lay in a die. for example, it extrudes by vulcanizing by the mold temperature of 150 degrees C - 200 degrees C, and the process condition for 4 minutes - vulcanizing time 6 minutes, and hollow-like configuration rubber is connected -- making -- the perimeter -- the weather strip 1 for automobiles of the same cross-section configuration is

manufactured.

[0007] Drawing 3 is the fragmentary sectional view showing how to connect the weather strip for automobiles of this invention. In order to shorten a connect time, it is what examined how to connect without vulcanizing and reached this invention. A plastics component uses [ a hollow-like configuration rubber component ] the thermoplastic elastomer of the polyolefine system of a non-vulcanizing system to an EPDM system. The injection-molding mold which can be fabricated a knockout hollow-like rubber configuration and in the shape of isomorphism is used. the general-purpose injection molding machine after [ from which it does not escape by the elastomer by which knockout hollow-like configuration rubber was injected ] holding with an injection-molding mold like -- injection resin temperature: 170 - 230-degree die temperature : 20- 30-degree injection time amount : 3- 15-second cooldown delay : 10- It fabricates on the conditions for 30 seconds.

[0008] As a polyolefine system elastomer, there is Santoprene (made in AES Japan, Inc.).

[0009]

[Function] In order to connect the weather strip for automobiles in the shape of a loop formation, this extrusion hollow-like rubber configuration and a cross section carry out installation immobilization of the edge and edge of hollow-like configuration extrusion rubber at isomorphism-like the die for injection, and a connection is prepared in the fixed space of Hazama of this edge and an edge, and injection molding of the thermoplastics is carried out and it connects.

[0010]

[Effect of the Invention] Although there was a limitation in cycle time compaction and the EPDM system rubber which is thermosetting resin needed 4 minutes or more in the present condition, since it was made injection molding by the thermoplastics of a non-vulcanized system, the molding cycle became 50 - 100 seconds, and the compaction of a large connect time of it was attained from vulcanization shaping as compared with the conventional rubber vulcanization connection. In addition, the fault which appearance faults, such as air bubbles, tend to generate in low compacting pressure has been improved.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] The outline top view of the weather strip for automobiles.

[Drawing 2] The A-A view sectional view of drawing 1 .

[Drawing 3] The outline sectional view showing the connection method of this invention.

[Description of Notations]

1 Weather Strip

2 Body Flange

3 Attachment Section

4 Seal Lip

5 Body

6 Ridge Lip

7 Connection

8 Exit Hole

9 Knockout Rubber Hollow Object

10 RAGEJJDOA

11 Insertion Metal

12 Non-Dryness Sealer

13 Injection-Molding Mold

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[Translation done.]

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65/70		7639-4F	65/70	
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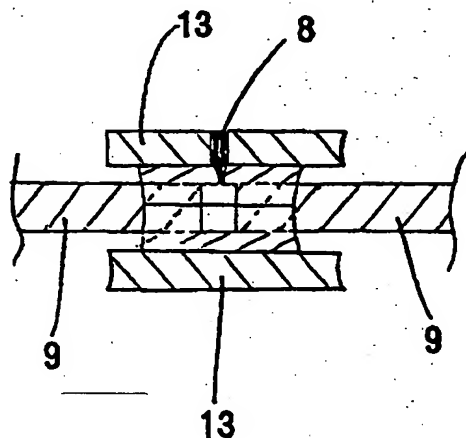
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(54) 【発明の名称】 自動車用ウェザーストリップの接続方法

(57) 【要約】

【目的】 自動車用ウェザーストリップの接続方法を同材料のゴム系による長時間加硫接続を別の方法で成形加工時間を短縮させる。

【構成】 中空状に押出成形された端部と端部を接合する自動車用ウェザーストリップにおいて、該押出された中空状押し出しゴムの端部と端部に接続部を設けて対向させて該押し出し中空状ゴム形状と断面が同一形状に射出可能な射出成型型に載置固定し該接続部に熱可塑性樹脂を射出成形して接合する自動車用ウェザーストリップの接続方法。



## 【特許請求の範囲】

【請求項1】 中空状に押出成形された端部と端部を接合する自動車用ウェザーストリップにおいて、該押出成形された中空状押し出しゴムの端部と端部に接続部を設けて対向させて射出成型型に載置固定し該接続部に熱可塑性樹脂を射出成形して接合することを特徴とする自動車用ウェザーストリップの接続方法。

【請求項2】 接続部が中空押し出しゴムの断面と同一形状の射出成型型より射出成形される請求項1記載の自動車用ウェザーストリップの接続方法。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】 自動車用ウェザーストリップに関する。

## 【0002】

【従来の技術】 押し出し形状と同形状に成形出来る成型型を使用し押し出しゴム材料と同等のEPDM系ゴムを型温150℃～200℃、加硫時間4分～6分の成形条件で加硫することで押し出しゴムを接続させ、全周同じ断面形状のループ状に接続しウェザーストリップを製作する。

## 【0003】

【発明が解決しようとする課題】

1) 熱硬化性樹脂であるEPDM系ゴムは成形時間短縮には限界があり、現状では4分以上が必要である。

2) 低成形圧力で気泡等の外観不具合が発生しやすい。

【0004】 上記課題を解決するために鋭意検討した結果、ゴム成分がEPDM系で、プラスチック成分がポリオレフィン系の熱可塑性エラストマーを用い、押し出しゴムが射出されたエラストマーで抜けない様に金型で保持した後、汎用の射出成型機にて成形することにより良好な接着性が得られ、又気泡等の外観不具合を生じない接続部が得られた。

## 【0005】

【課題を解決するための手段】 すなわち本発明は、中空状に押出成形された端部と端部を接合する自動車用ウェザーストリップにおいて、該押出成形された中空状押し出しゴムの端部と端部に接続部を設けて対向させて中空状押し出しゴムと断面が同一形状の射出成型型に載置固定し該接続部に熱可塑性樹脂を射出成形して接合することを特徴とする自動車用ウェザーストリップの接続方法である。

【0006】 本発明を図面に基づいて説明する。図1は自動車用ウェザーストリップの概略平面図であり、図2は図1のA-A矢視断面図である。従来は図1の接続部7はEPDM系ゴムの押し出し中空状成形品をループ状に接続するものであるが、詳述すると、押し出し中空状形状と同形状に成形できる成型型を使用し押し出しゴム材料と同等のEPDM系ゴムで押し出しゴム中空状形状で押し出した未加硫ゴムを一定形状に切断して成型型に

載置し、例えば型温150℃～200℃、加硫時間4分～6分の成形条件で加硫する事で押し出し中空状形状ゴムを接続させ全周同じ断面形状の自動車用ウェザーストリップ1を製作する。

【0007】 図3は本発明の自動車用ウェザーストリップを接続する方法を示す部分断面図である。接続時間を短縮するために、加硫せずに接続出来る方法を検討して本発明に到達したもので、中空状形状ゴム成分がEPDM系に対して、プラスチック成分が非加硫系のポリオレフィン系の熱可塑性エラストマーを用い、押し出し中空状ゴム形状と同形状に成形出来る射出成型型を使用し、押し出し中空状形状ゴムが射出されたエラストマーで抜けない様に射出成型型で保持した後、汎用の射出成型機にて

射出樹脂温度： 170～230度

成型型温度： 20～30度

射出時間： 3～15秒

冷却時間： 10～30秒

の条件で成形する。

【0008】 ポリオレフィン系エラストマーとしてはサントブレン(AESジャパン株式会社製)がある。

## 【0009】

【作用】 自動車用ウェザーストリップをループ状に接続する為に、中空状形状押し出しゴムの端部と端部を該押し出し中空状ゴム形状と断面が同形状の射出成型型に載置固定し、該端部と端部の間の一定の空間に接続部を設け熱可塑性樹脂を射出成形し接続する。

## 【0010】

【発明の効果】 熱硬化性樹脂であるEPDM系ゴムは成形時間短縮には限界があり、現状では4分以上が必要であったが、加硫成形から、未加硫系の熱可塑性樹脂による射出成形にしたので、成形サイクルは50～100秒となり従来のゴム加硫接続と比較し大幅な接続時間の短縮が可能となった。加えて低成形圧力で気泡等の外観不具合が発生しやすい欠点が改善された。

## 【図面の簡単な説明】

【図1】 自動車用ウェザーストリップの概略平面図。

【図2】 図1のA-A矢視断面図。

【図3】 本発明の接続方法を示す概略断面図。

## 【符号の説明】

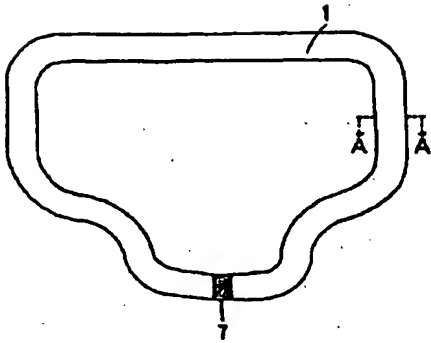
- 1 ウェザーストリップ
- 2 ボデーフランジ
- 3 嵌着部
- 4 シールリップ
- 5 ボデー
- 6 水切りリップ
- 7 接続部
- 8 射出口
- 9 押し出しゴム中空体
- 10 ラゲッジドア



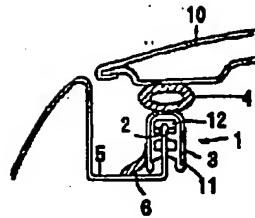
- 11 インサートメタル  
12 不乾性シーラー

- 13 射出成型

【図1】



【図2】



【図3】

